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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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01/17/2002

Toshiyuki Okumura

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06/17/2004

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EXAMINER

JACKSON, CORNELIUS H

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	10/050,078	OKUMURA, TOSHIYUKI	
	Examiner	Art Unit	
	Cornelius H. Jackson	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-24 and 34-36 is/are allowed.
- 6) ☒ Claim(s) 16-18, 20, 21, 25-29 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 19 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 5-7, filed 01 April 2004, with respect to the rejection(s) of claim(s) 16-36 under 35 USC § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Nakamura et al. (5777350).

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 16-18, 25-29 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamura et al. (5777350). Regarding claim 16, Nakamura et al. disclose a gallium nitride semiconductor light emitting device **Fig. 1** having emission wavelengths within a band corresponding to ultraviolet to green, **see col. 7, line 55**, comprising a semiconductor substrate **11**, an active layer **14** having a quantum well structure, **see col. 6, lines 21-24**, and made of nitride semiconductor containing at least indium and gallium, **see col. 6, lines 19-24**, and a first cladding layer **13** and a second cladding layer **61** for sandwiching the active layer **14** therebetween, wherein the active layer consists of two to four quantum well layers and one to three barrier layers each interposed between the quantum well layers, and the one or each barrier layer has a layer thickness of 4 nm or less, **see col. 7, lines 50-55. See col. 6, line 10-col. 9, line 55.**

Regarding claim 26, Nakamura et al. disclose a gallium nitride semiconductor light emitting device **Fig. 1** having emission wavelengths within a band corresponding to

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ultraviolet to green, **see col. 7, line 55**, comprising a semiconductor substrate **11**, an active layer **14** having a quantum well structure, **see col. 6, lines 21-24**, and made of nitride semiconductor containing at least indium and gallium, **see col. 6, lines 19-24**, and a first cladding layer **13** and a second cladding layer **61** for sandwiching the active layer **14** therebetween, wherein the active layer forms an oscillating section of the semiconductor laser device (**inherent property of the laser diode device**) and consists of two to four quantum well layers and one to three barrier layers each interposed between the quantum well layers, and the one or each barrier layer has a layer thickness of 4 nm or less, **see col. 7, lines 50-55. See col. 6, line 10-col. 9, line 55.**

Regarding claims 17, 27 and 28, Nakamura et al. disclose a device wherein inherently each of the quantum well layers has electrons and holes uniformly distributed therein, since the thickness of the quantum well layers and barrier layer(s) is 10 nm or less, **see col. 36, example 4, cols. 39-40, example 13 and cols. 43-44, example 24. See applicant's specification page 8, lines 1-5 and page 20, lines 20-24.**

Regarding claim 18, Nakamura et al. disclose all the stated limitations, **see rejection of claim 26 above.**

Regarding claims 25 and 33, Nakamura et al. disclose all the structural elements of the claimed invention, it is inherent that the operation of Nakamura et al. device to an electric current would produce/generate a modulated optical output. **See col. 6, line 10-col. 9, line 55.**

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Regarding claim 29, Nakamura et al. disclose all the stated limitations, **see col. 6, lines 10-30.**

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 20, 21, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (5777350) in view of Larson (5767704). Regarding claims 20, 21, 31 and 32, Nakamura et al., as applied to claims 16, 18 and 26 above, teach all the stated limitations except for a driving circuit for injecting current into the semiconductor laser device wherein the electric current is modulated current and a modulation frequency of the current is 300 MHz or more. Larson teach a driving circuit for injecting current into the semiconductor laser device wherein the electric current is modulated current and a modulation frequency of the current is 300 MHz or more was well known in the art at the time the invention was made and was a requirement of the read mode to prevent the laser device from mode hopping, **see col. 1, lines 15-50**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the driving circuit of Larson to the laser of Nakamura et al. to prevent the laser device from mode hopping.

Allowable Subject Matter

7. Claims 22-24 and 34-36 are allowed.

8. Claims 19 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 22-24 and 34-36, prior art fails to disclose, teach, or suggest, alone or in combination, a gallium nitride semiconductor device as claimed having cladding layer with a ridge surface and a planar surface and an active layer containing two to four quantum well layers and one to three barrier layers respectively, each interposed between the quantum well layers, and the one or each barrier layer has a layer thickness of 4 nm or less.

Regarding claims 19 and 30, prior art fails to disclose, teach, or suggest, alone or in combination, a gallium nitride semiconductor device as claimed being a self-oscillating semiconductor laser device, **see specification, page 26, lines 3-10**, and having an active layer containing two to four quantum well layers and one to three barrier layers respectively, each interposed between the quantum well layers, and the one or each barrier layer has a layer thickness of 4 nm or less.

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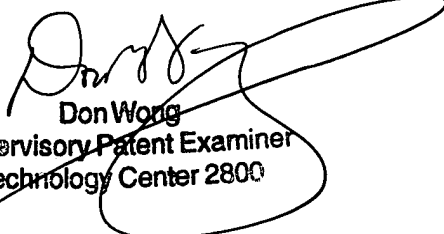
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cornelius H. Jackson whose telephone number is (571)272-1942. The examiner can normally be reached on 8:00 - 5:00, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571)272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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